

REMARKS

SUMMARY

Claims 1-40 have been rejected in the above-identified Office Action. Claims 1, 3-9, 11-14, 17, 19-30, and 35-39 have been amended. Claims 10, 15-16, 31-34, and 40 are canceled. Reconsideration of the application is respectfully requested.

Applicants thank Examiner for considering Applicants' previously-filed remarks. Examiner's response to arguments will be addressed as appropriate below.

Applicants note the Office's acknowledgment of the priority claim under § 119.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103

Claims 1, 4, 6, 16, 35, and 37 are rejected under § 103(a) as being unpatentable over Schneider (US Pat. No. 6,246,716) in view of Adham (US Pat. No. 6,100,716) in further view of Ambrosio (US Pat. No. 4,755,984). The Office rejects these claims under a motivation to combine rationale which requires that the Office, among other things, find that there is a motivation, suggestion, or teaching in the references – or in the knowledge generally available – to combine prior art references or to modify a reference to achieve the claimed invention.¹

Amended claim 1 is representative and recites an integrated circuit comprising:

- a transmitter to transmit a first signal to another integrated circuit, wherein the transmitter has a transmitter buffer having a transmitter buffer output and a transmitter buffer input;

- a receiver to receive a second signal from the other integrated circuit, wherein the receiver has a receiver buffer having a receiver buffer output and a receiver buffer input, the receiver buffer input coupled to the transmitter buffer output; and

- a differential buffer coupled between the transmitter buffer input and the receiver buffer output,

- wherein the differential buffer is configured to accept a third signal from the input of the transmit buffer and to adjust the third signal in phase and amplitude to cancel a first signal echo component of the second signal at the output of the receiver buffer.

In rejecting the previous version of claim 1, the Office cites the echo canceller in Schneider figure 4 for teaching adjusting a third signal in phase and amplitude to cancel a first signal. The Office cites the “transmitter” of figure 4 for the transmitter of claim 1 and the “receiver” of figure 4 for the transmitter of claim 1. The Office concedes that Schneider does not

teach a differential buffer as recited in the previous version of claim 1, but instead cites figure 1A of Adham for teaching a differential buffer. Additionally, Ambrosio is cited for teaching an echo canceller disposed on an integrated circuit.

Schneider figure 4 shows a transmitter portion of a transceiver 720 connected to a receiver portion of a transceiver 760 via local loop 900, hybrid 750, and echo canceller 730. It is understood that transceiver 720 also includes an unseen receiver portion in communication with an unseen transmitter portion of transceiver 760. Applicants assume for the sake of argument that Schneider discloses components that can be construed as a transmitter buffer and a receiver buffer as recited in claim 1. The purpose of the communication system shown in Schneider is to provide bidirectional communication over a long distance while ensuring compatibility with other services such as T1, ISDN, HDSL, and ADSL.² One of ordinary skill would understand that the hybrid, local loop, and echo canceller shown in figure 4 are part of a telecommunications provider's network system, typically provided via a central office (CO).³

Even assuming for the sake of argument that the Schneider echo canceller is configured to adjust “the third signal in phase and amplitude to cancel a first signal echo component of the second signal at the output of the receiver buffer,” as recited in amended claim 1, the mere combination of Schneider, Adham, and Ambrosio will fail to teach or suggest all recited elements of claim 1. To teach or suggest all recited elements of amended claim 1, not only must the Adham differential buffer be added to the Schneider transceiver such that it is “coupled between the transmitter buffer input and the receiver buffer output”, but the signal adjustment function of the echo canceller shown in Schneider figure 4 must also be transferred to the newly-added differential buffer. In other words, the combination of Schneider, Adham, and Ambrosio does not teach or suggest a “*differential buffer* ... configured to ... adjust the third signal in phase and amplitude to cancel a first signal echo component of the second signal at the output of the receiver buffer” as recited in claim 1. At best, the combination teaches a transmitter, a receiver, and a differential buffer of unspecified function, plus an *echo canceller* configured to adjust the third signal in phase and amplitude to cancel a first signal echo component of the second signal at the output of the receiver buffer. Thus, some motivation to modify one or more

¹ See MPEP 2143, section (G).

² See Schneider column 7, lines 24-26.

³ See Schneider column 1, lines 26-40.

of the prior art references would have been required to render the differential buffer of amended claim 1 obvious.

Firstly, there would have been no suggestion to modify the data buffer of Adham to achieve the differential buffer of amended claim 1. Adham teaches an improved voltage excursion detection apparatus for integrated circuit testing. There is no evidence in Adham or in what is generally known in the art that modifying the Adham data buffer would have been helpful in achieving this purpose. Therefore, Applicants submit that there would have been no motivation to modify Adham to achieve the differential buffer of claim 1.

Furthermore, there would have been no motivation to modify Schneider to move the adjustment function of the echo canceller to be disposed between the “the transmitter buffer input and the receiver buffer output” as recited in claim 1. One of ordinary skill would recognize that the transceivers taught by Schneider are meant to communicate via conventional telephone company local loops. These local loops already contain echo cancellers as shown in figure 4. Modifying Schneider to eliminate the echo cancellation function from the local loop would require a redesign of the telephone local loop architecture. Because the success of such a redesign is questionable, such a modification of Schneider would render it unsuitable for its intended purpose – use on the Central Office local loop. Therefore, there would have been no motivation to modify Schneider to move the echo cancelling function such that it is disposed between “the transmitter buffer input and the receiver buffer output” as recited in claim 1.

For at least these reasons, Applicants submit that there would have been no teaching, suggestion, or motivation to modify Schneider or Adham to achieve the differential buffer of amended claim 1 and that, accordingly, claim 1 is patentable over the combination of Schneider, Adham, and Ambrosio.

Claims 4, 6, and 16 depend from claim 1 and, for at least similar reasons, are therefore also patentable over the combination. Independent claim 35 contains subject matter generally similar to claim 1 and claim 37 depends from claim 35. Therefore, Applicants submit that claims 35 and 37 are also patentable over the combination for at least similar reasons as discussed above.

Claims 2-30 and 32-40 are variously rejected over several different combinations of prior art documents including, for each one, Schneider, Adham, and Ambrosio. Applicants submit that

these several combinations of prior art documents fail to remedy the deficiencies of Schneider, Adham, and Ambrosio as discussed above with reference to claims 1 and 35. Claims 2-9, 11-14, 17, 19-30 depend from claim 1. Claims 36-39 depend from claim 35. For at least the same reasons as discussed above, Applicants accordingly submit that these claims are patentable over the various combinations of prior art references cited against them.

Claims 10, 15-16, 31-34 and 40 are canceled, rendering their rejections moot.

CONCLUSION

In view of the foregoing, Applicants submit that all pending claims are in a condition for allowance. If the Examiner has any questions concerning the present paper, the Examiner is kindly requested to contact the undersigned at (206) 407-1542. If any fees are due in connection with filing this paper, the Commissioner is authorized to charge the Deposit Account of Schwabe, Williamson and Wyatt, P.C., No. 50-0393.

Respectfully submitted,
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